



Leviathan Mine Superfund Site

U.S. Environmental Protection Agency \$ Region 9 \$ San Francisco, CA \$ November 2007

Alpine County, California

UPDATE ON SITE ACTIVITIES

Controlling and cleaning up the acid mine drainage (AMD) from Leviathan Mine has been the continuous focus since the site was added to EPA's Superfund list in 2000. There has been much success in this regard, especially during the summer months when access to the site is not affected by snow. An effort to expand collection and treatment to an on-site year-round system was pursued following public discussions in late 2004. This fact sheet will report on the difficulties encountered in pursuit of year-round treatment, what we learned from the experience and the continuing investigations geared toward a long-term cleanup plan.

On-Site Year-Round Treatment of Acid Mine Drainage

Though not meant to be a long-term solution to the acid mine drainage problem at Leviathan Mine, on-site year-round treatment appeared to be a major step toward cleaning up the 10-mile stream system affected by the mine. In actuality, the attempt proved more difficult than anticipated and inappropriate for the short-term removal action we thought could be successfully completed. It became more than a temporary treatment system could reliably accomplish. However, EPA remains committed to extending the treatment for as long as possible while we evaluate long-term remedies. Implementation challenges make it more suitable to look into this treatment option as part of the long-term Remedial Investigation/Feasibility Study (RI/FS). The RI/FS is discussed in more detail below.

The Atlantic Richfield Company (ARC) began work toward a year-round system in late 2005 by successfully testing a common lime treatment called High Density Sludge (HDS). The lime treatment neutralizes acid and removes metals from the acid mine drainage so the treated water can be safely released into the creek. This led to attempts to design a winterized HDS system which became considerably more complex than was anticipated due to the need to enclose and heat the facilities, the need for more power, more operator health and safety features, etc. Efforts to construct the winterized

system began in July 2006, but could not be completed before the end of the construction season. During fall and winter 2006, ARC met with EPA and technical representatives from stakeholder groups (tribal, state, federal, local and businesses) to present their analysis of year-round treatment at Leviathan, explaining how the scope of the project proved to be beyond what had been anticipated for a short-term solution.

The objectives for on-site year-round treatment were to improve protection of human health and the environment from AMD while gaining critical information to help in eventually selecting a long-term remedy. Treatment systems are already operating all year for about half of the acid discharging from the site, specifically the bioreactor for the Aspen Seep (which stimulates natural microbes to neutralize acid and remove contaminants) and a pond collection system for the Adit and Pit Underdrain. The focus of new construction was to be on the AMD coming from two sources, the Channel Underdrain and the Delta Seep, which discharged untreated during the winter months. We had then hoped to minimize the need for the pond collection system by incorporating the two other AMD sources, the Adit and Pit Underdrain, into a combined year-round system. Another objective was to eliminate untreated AMD going into the watershed and help us learn how to manage remaining sources, such as contaminated sediment, long-term.

Although we were unable to implement such treatment at the time, our objectives remain the same. EPA has decided that the best way to achieve these objectives is to continue intercepting and treating AMD from these two source areas from early spring to late autumn when personnel can safely access the site. This includes:

- \$ Designing, constructing and operating an improved on-site three-season treatment system to test the effectiveness and reliability of cold-weather treatment of AMD from the two sources listed above. This is meant to minimize the release of untreated discharge and ensure worker safety;
- \$ Continuing and improving year-round treatment of the Aspen Seep through the Bioreactor process;
- \$ Continuing year-round capture and storage of AMD from the Adit and Pit Underdrain for separate summer treatment; and
- \$ Performing additional treatability studies that test how we might combine treating certain aspects of all AMD sources from Leviathan.

In summary, although the efforts toward an on-site, year-round treatment system had technical difficulties, there were mitigation actions that were required of Atlantic Richfield that did not occur. A lack of timely action to minimize the downstream migration of AMD led to additional and unnecessary environmental degradation during that period. For that, EPA has informed Atlantic Richfield that it intends to seek penalties and punitive damages and invited ARC to discuss these claims with EPA. Discussions are ongoing.

Remedial Investigation/ Feasibility Study (RI/FS)

As part of the Superfund process, the RI/FS is sort of the “meat and potatoes” of site work. The RI gives us the site information necessary to look at options for cleaning up the site. The FS evaluates those options and presents a recommendation. Both the RI and FS are important tools for the public that help the community give input to EPA on cleaning up the site. At the Leviathan Mine site, the RI/FS will enable us to make a well-informed decision on the final, long-term cleanup. The experience we have already gained from our work with various

Information Repositories

Documents related to the Leviathan Mine Superfund site are available at the following locations:

Alpine County Library

270 Laramie St.
Markleeville, CA 96120
(530) 694-2121

Hours:

Tues, Wed, Thurs 10:00 am to 6:00 pm
Fri and Sat 10:00 am to 5:00 pm

Nevada State Library and Archives

100 N. Stewart St.
Carson City, NV 89701
(775) 684-3360

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Douglas County Library

1625 Library Lane
Minden, NV 89423
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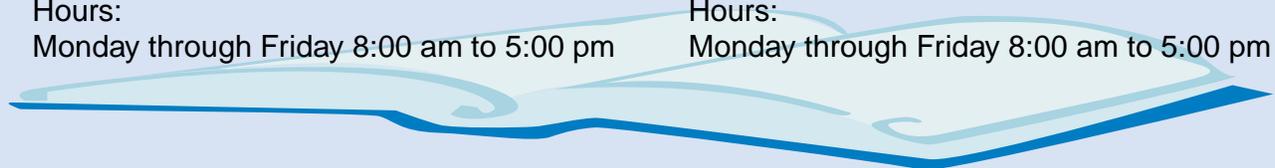
Mon, Tues, Wed 9:00 am to 8:00 pm
Thurs, Fri, Sat 9:00 am to 6:00 pm

EPA Superfund Records Center

95 Hawthorne St., 4th floor
San Francisco, CA 94105
(415) 536-2000

Hours:

Monday through Friday 8:00 am to 5:00 pm



cleanup technologies at the site has set us in the right direction and shown us what additional scientific and engineering information we need to gather. The Statement of Work for the RI/FS has been developed and revised over the years based on our experience at the site along with input from a wide range of interested parties. EPA will continue to seek information and input from the community and local experts throughout the decision-making process.

Additional Information Needed

Collecting the RI information necessary to look at cleanup options is based on the goals that follow existing regulations, such as state and federal water quality rules, and on analyzing risk to humans and the environment. While acidic drainage from the mine was uncontrolled, the contaminated water in the creeks posed unacceptable long-term risks. As this discharge is more completely treated, EPA must investigate (via a Risk Assessment) whether arsenic and other metals from the mine have contaminated the soil and sediment enough to

increase the risks to users of the stream system. EPA needs a systematic study of the mine site to see if there are options for preventing some portion of the clean water from infiltrating into the waste piles where acid is formed. We also must be sure we have identified all the routes of contamination seeping out of the mine.

Collecting and treating the acidic contamination has proven difficult at this site due to its size and remote mountain location. The alternatives we have attempted on a trial basis have been expensive and not necessarily reliable for the entire site over the long term. The continuing engineering analysis for the FS will look at effectiveness, safety, cost and other factors.

EPA expects the collection of all relevant site information to be completed in about two years followed by the RI/FS Report. The community will be encouraged to review and comment on the draft report. EPA will then seek formal comments from the public before any cleanup plan is finalized.



Mailing List Coupon

If you are not already on the Leviathan Mine mailing list and would like to be, please fill out the coupon below and return it to: Vicki Rosen, Community Involvement Coordinator, U.S. EPA, 75 Hawthorne St. (SFD-3), San Francisco, CA 94105 or e-mail the information to: rosen.vicki@epa.gov

Name _____

Mailing Address _____

City, State _____ Zip _____

Telephone (optional) _____

E-mail (optional) _____

Affiliation (optional) _____

Leviathan Mine Superfund Site Activities Update

For More Information

If you have questions or concerns regarding the Leviathan Mine Superfund site or would like to be added to the mailing list, please contact:

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EPA toll-free number:

(800) 231-3075 (Please
leave a message and your
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